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Parental perception and acceptance of behavior guidance techniques and cooperation during dental examination for Libyan autistic children

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Keywords: Autism spectrum disorder, behavior guidance technique, general anesthesia, pediatric dentistry, tell-show-do

Abstract: Parental perception of child cooperation during dental examination and acceptance of behavior guidance techniques are critical determinants in the successful provision of pediatric dental care, particularly for children with autism spectrum disorder, who frequently exhibit behavioral and communication challenges. This cross-sectional comparative study aimed to evaluate differences in parental perception and acceptance of behavior guidance techniques between autistic and non-autistic children in Benghazi City, Libya. The study was conducted over a four-month period in the Rehabilitation Centers for children with autism spectrum disorder and the Medical Services Center. A total of 60 children aged 3-14 years were enrolled, including 30 autistic children and 30 non-autistic healthy control children. Data were collected through structured self-administered questionnaires completed by parents or caregivers during personal interviews. The questionnaire gathered information on socio-demographics, parental education and occupation, prediction of child cooperation during dental examinations, and acceptance of behavioral guidance techniques. The statistical analysis was performed by Chi-square, Fisher's exact, and Monte Carlo tests where appropriate. The results revealed no significant differences between the groups in terms of age-related differences, gender distribution, or parental educational level. However, a significant difference was observed in parental perception of child cooperation. The majority of parents of non-autistic children (80.0%) anticipated cooperative behavior, whereas most parents of autistic children were uncertain (73.3%) or expected uncooperative behavior (10.0%). Sedation was the most accepted technique among parents of autistic children (66.7%), followed by general anesthesia (20.0%), while Tell-Show-Do was predominantly accepted among parents of non-autistic children (93.3%). Restraint techniques were accepted minimally in both groups. Parents of children with autism demonstrated greater acceptance of advanced pharmacological approaches, highlighting the need for individualized communication and tailored behavior management strategies in pediatric dental practice.

Introduction

Children who need medical treatments that extend beyond standard care for their physical, mental, sensory, behavioral, emotional, and chronic medical conditions qualify as having special health care needs. The dentistry field has neglected to deliver dental care to this group because their needs require specialized knowledge and enhanced understanding, and dedicated service approaches [1]. The same developmental disability is referred to by other names, including autism, autistic syndrome, autistic disorder , infantile autism,

and childhood autism [2]. Leo Kanner identified the disorder in 1943 and named it autism after noticing a cluster of symptoms in a group of children, and presented case studies in a study work (Autistic Disturbances of Affective Contact), which described children who displayed behaviors that were autistic aloneness. These children entered the world with an absence of social connection ability, which included restricted relationship building, speech delays, distant behavior, an absence of imaginative thinking, and a strong need for routine [3]. In Libya, data on the prevalence rate of autism spectrum disorder (ASD) are still deficient. A hospital-based study in the neurodevelopment clinic in Tripoli City was done to assess the prevalence of ASD in Libyan children [4]. All the children referred to this clinic with a diagnosis of speech and language disorders or behavioral difficulties were assessed. Thus, 38508 children were examined, 108 children had a history of delayed speech and language and/or behavioral difficulties [4].

Children with ASD are regarded as a high-risk group for dental caries according to the caries-risk assessment tool (CAT), which was adopted by the American Academy of Pediatric Dentistry [5]. A MEDLINE-based study to evaluate the neuropathology, medical management, and dental implications associated with autism showed that dentists should understand autism symptoms to make dental treatment more successful for patients with autism [6]. Medical professionals who treat autism symptoms need to understand how their prescribed medications affect dental health because dental practitioners should recognize these effects [6]. People with autism tend to develop oral problems because of their behavioral patterns, although autism does not cause any specific dental symptoms. The dental well-being of autistic people suffers from multiple factors, which include their inability to communicate effectively, failure to care for themselves, a tendency to injure themselves, eating habits, drug use, and opposition to dental treatment, and increased sensitivity to pain, and possible withdrawal from social activities [7]. The dental practice faces multiple obstacles because autistic children demonstrate behaviors that block their path to achieving successful dental treatment. A dental appointment creates problems for autistic children because they find it difficult to adjust when their usual life schedule gets interrupted [8]. The management of uncooperative children needs behavior management techniques that separate basic approaches from their advanced counterparts. A single study has proven that basic techniques show effective results through methods that include Tell-Show-Do (TSD) and voice control and positive reinforcement, distraction, and parental presence or absence [9]. The treatment of uncooperative children needs advanced behavior management techniques (ABMTs), which include protective stabilization and conscious sedation and deep sedation or general anesthesia to help kids receive dental care while building positive dental care relationships [10]. Parents tend to reject ABMTs when compared to basic behavior management methods [11]. The evidence remains sparse while parents hold different opinions about advanced treatment methods, which include protective stabilization regarding their success rates and possible dangers, and suitable application scenarios when their children show resistance to treatment. Staff members need to establish effective two-way communication systems with parents about ABMTs dangers and benefits to deliver proper dental services. Dentists need to assess parental beliefs together with professional standards when they choose appropriate ABMTs for individual patient needs and medical situations [12].

Previous studies have examined parents view their children's dental examination cooperation and their response to behavior guidance techniques through comparison of children with ASD with typical development children [13, 14]. Evidence shows that parents who have children with ASD show higher levels of behavioral problems, while they predict their children will show less cooperation during dental appointments compared to parents who do not have children with ASD [13, 14]. The parents show better acceptance for using advanced behavior management methods, which include protective stabilization, sedation, and general anesthesia when standard communication approaches do not work [13, 15]. Parents who have children without ASD tend to reject medical interventions, which include drugs and physical restrictions, so they prefer using behavioral methods, which involve positive reinforcement and TSD approaches [10, 13]. In addition, studies highlight that parental acceptance is strongly influenced by previous dental experiences, perceived child anxiety, and the quality of explanation provided by the dentist [10, 15]. Although previous national studies have addressed

oral health status and dental needs of children with ASD in Libya [16-19], there is still a lack of data regarding comparisons between children with ASD and their non-autistic peers. Such information is essential to assist pediatric dentists in selecting and implementing behavior guidance techniques that are effective and acceptable to parents, thereby enhancing children's cooperation and improving the overall quality of dental care provided to this group. This gap in local data prompted the conduction of this study to assess parental perception and acceptance of various behavior guidance techniques, and to evaluating the level of cooperation during dental examination among autistic children.

Material and methods

Study design and population: A research team performed a cross-sectional comparison study, which took place at the Benghazi Medical Services Center and the Rehabilitation Center for Children with ASD over four months (9-12, 2025). At the time of the study, there were 68 autistic patients attending Rehabilitation Centers for children with ASD. 30 parents/caregivers of autistic children [18 males, 12 females] agreed to participate in this study, and a control group consisted of 30 parents/caregivers of non-autistic healthy children. The children were between the ages of 3 and 14 years, with a mean age of 7.41 ± 2.41 years.

Data collection: The researcher conducted face-to-face interviews with parents and caregivers to collect their responses during the data collection process. The investigators collected data through parent completed validated self-administered questionnaires, which contained questions about their child's demographics, their own educational and work background evaluate health records, and ability to forecast dental examination cooperation, and acceptance of different treatment approaches for their children. The researchers stayed at the rehabilitation facility to assist participants with their questionnaire questions because they needed help understanding specific items from their survey.

Ethical approval: The research study obtained official approval from the "ASD" Rehabilitation Center, which operates in Benghazi, Libya (ASD-center, 2025). The research team followed International Ethical Guidelines throughout their study execution. The study team required all children who joined the research obtain written consent from their parents or legal guardians, who received complete information about the study objectives and procedures. The research team maintained strict data protection through confidentiality procedures and data anonymization techniques while all study subjects joined the research voluntarily.

Statistical analysis: Each input data received a code number, which Excel used to insert information into its spreadsheet documents. The investigators performed data analysis through computer-based data entry. The qualitative information received its description through numerical values and their corresponding percentage values. The quantitative data received its description through mean ± standard deviation, and median, and range, which included minimum and maximum values. The Chi-square test evaluated demographic data together with maternal occupation data to assess differences between children who developed autism and those who did not. The investigators solved Chi-square problems through Fisher's exact test and Monte Carlo correction when >20.0% of the matrix elements contained predicted <5. The statistical significance difference was determined through a 5.0% threshold for all results that they obtained ($p<0.05$).

Results

In this study, there were 60 matched children, 30 with autism and 30 healthy kids without autism. The total population consisted of 60.0% males and 40.0% females across research groups. The children who participated in this study ranged from three years old to fourteen years old. The data showed that children with autism reached an average age of 7.41 ± 2.41 years, but their non-autistic peers reached an average age of 7.32 ± 2.53 years. The investigators tried to find matching pairs between the two groups through either the sibling relationship of the autistic child (40.0%) or their cousins (60.0%). The two groups showed no significant

differences in their age-related difference and gender distribution according to the findings (p=1.0). The educational background of fathers with autistic children showed that 3.3% completed elementary school, while 43.3% finished high school, and 53.3% obtained over degree. The educational achievement of fathers who had children without autism was equally divided between those who finished high school and those who obtained a university degree. The study revealed no significant difference between the two groups (p=0.793). All fathers in both groups were employed (100%), with no significant difference (p=1.0). Mothers who had children with autism showed 50.0% of them obtained a university degree, while 36.7% finished their education at the high school level. The findings indicated that most mothers who had children without autism obtained a university degree (60.0%), while others finished high school (30.0%), and some completed elementary school (10.0%). The data did not reveal any significant difference between the two groups (p=0.861). The employment status of mothers showed that 60.0% of mothers with autistic children do not work, while 56.7% of mothers who had children without autism also do not work. This revealed no significant difference between these two groups (p=0.793), as shown in **Figures 1** to **4**.

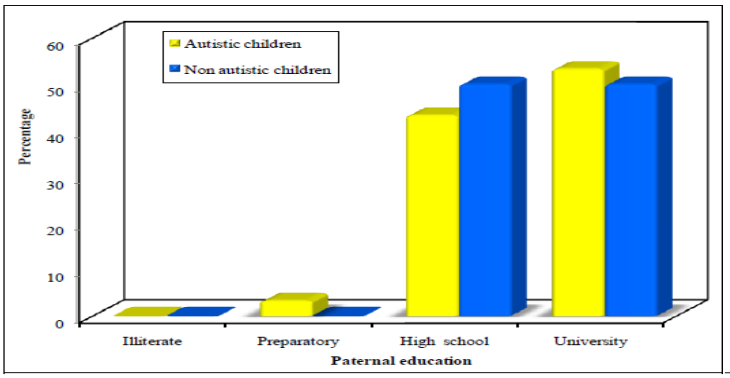

Figure 1: Comparison between the two groups regarding the paternal education

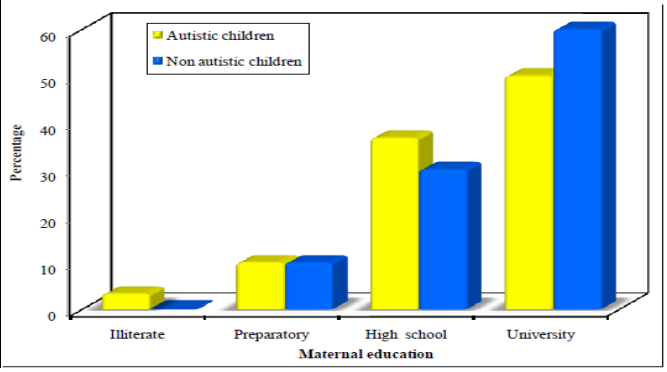

Figure 2: Comparison between the two groups regarding the maternal education

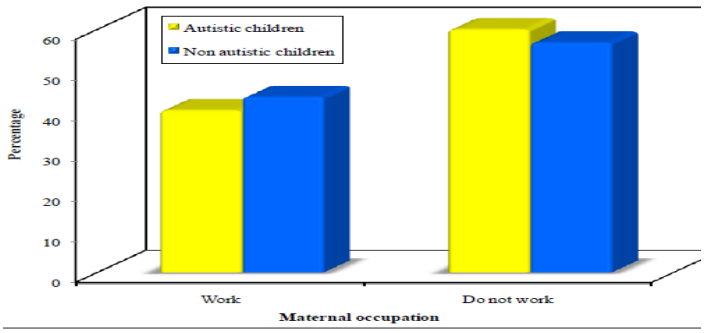

Figure 3: Comparison between the studied groups with respect to parental occupation

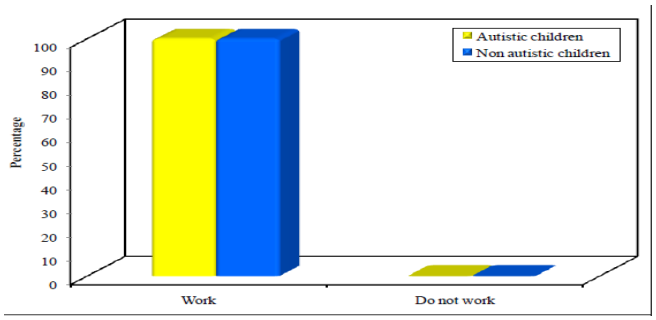

Figure 4: Comparison between the studied groups regarding the maternal occupation

In **Table 1**, the study compares two groups through which displays how parents perceive their children's behavior during dental examinations and their approval of dental behavior management techniques. A total of 73.3% of parents of children with autism reported that they do not know whether their child would cooperate during the dental examination, compared with 20.0% of parents of children without autism. The majority of parents who had children without autism believed their child would follow instructions (80.0%), but 16.7% of parents with autistic children shared this expectation. The dental examination of children with autism received uncooperative behavior predictions from 10.0% of their parents. The two groups showed very high statistically significant distinctions when calculated (p<0.001). Parents of children with autism showed the highest acceptance for sedation as their preferred behavior guidance method at 66.7%, which contrasted with

the 6.7% acceptance rate from parents whose children did not have autism. Parents who had children without autism showed the highest acceptance for the TSD method at 93.3%, but 10.0% of parents with children who had autism agreed with this method. The data revealed a very highly significant difference through its results ($p<0.001$). 3.3% of parents whose children had autism supported protective stabilization (restraint), and the data revealed no significant difference between the groups ($p=1.0$). 20.0% of the parents reported their opinion about general anesthesia for children with autism and their acceptance of it, and the data revealed a significant difference between groups through the statistical analysis ($p=0.024$). The parents who had children without autism did not show any approval for protective stabilization or general anesthesia as acceptable methods.

Table 1: Comparison between parental perception of child's cooperation during examination and parental perception and acceptance of behavior guidance techniques used with their child

Parameter	Autistic children (n=30)		Non-autistic children (n=30)		χ^2	p
	Frequency	Percent	Frequency	Percent		
	Parental perception of child's cooperation during examination					
Will not cooperate	3	10	0	0	24.968	MC p<0.001
Will cooperate	5	16.7	24	80		
Do not know	22	73.3	6	20		
	Parental perception of behavior guidance techniques used with their child					
TSD	3	10	28	93.3	41.713	<0.001
Restraints	1	3.3	0	0	1.017	FEp=1.000
Sedation	20	66.7	2	6.7	23.254	<0.001
General anesthesia	6	20	0	0	6.667	FEp=0.024
	Parental acceptance of behavior guidance techniques used with their child					
TSD	3	10	28	93.3	41.713	<0.001
Restraints	1	3.3	0	0	1.017	FEp=1.000
Sedation	20	66.7	2	6.7	23.254	<0.001
General anesthesia	6	20	0	0	6.667	FEp= 0.024

χ^2: Chi-square test, MC: Monte Carlo test, and FE: Fisher Exact test

Discussion

In current times, dentists now encounter more children with ASD because the disorder has become more common [20]. Dental staff need to learn about the specific challenges that children with ASD encounter during their home-based and professional dental treatment [21]. The present study was performed to develop reliable data in this field because Libya lacks sufficient information about how parents forecast their children's dental examination behavior [22] and their views about treatment methods for children with autism and without autism. This included 30 autistic children who were artificially matched with 30 non-autistic children between the ages of three and fourteen years. The ratio of male to female was 1.5: 1. The ratio continues to display its original pattern while showing different values compared to the previously published data ratio [23, 24]. The different rates of personality disorders and schizophrenia between males and females probably explain why these disorders appear differently in each gender. For example, dementia is more common in females with ASD, but personality disorders and schizophrenia are more common in males [25]. The current study showed that most parents involved in the study possess educational backgrounds that reach the university level. The study also showed that parents who have achieved a higher level of education do not dedicate enough time to handling their children's dental issues and dental treatment needs. A study by Namal and colleagues [26] showed that children with autism develop fewer dental caries when their mothers obtained better education and actively monitored their child's sugar consumption, and brushing activities, and dental care [26]. The present study showed that most parents of children with autism remain unsure about how their children will behave when dentists perform their examinations. The patients showed a stronger interest in sedation because the medical staff failed to establish their actual behavior during dental procedures. Another study by Lowe

and Iedrychowski [27] supports this discovery because it shows that dental treatment for patients with autism becomes possible through proper sedation methods. Parents of children with autism preferred to avoid the TSD behavior guidance method, which they considered unsuitable for their children with autism when compared to children who did not have autism. Parents of autistic children showed a 20.0% agreement rate about using general anesthesia as a method to change their children's behavior. Data demonstrate that parents showed a greater interest in receiving dental care for an extended period than they did in receiving dental rehabilitation therapy in a single appointment, while they also worried about the use of general anesthesia. Investigators need to understand the current study's limitations when they analyze its results and develop recommendations for further research projects. The area faced a major restriction because it included only a few participants who came from one autism rehabilitation center, which operated in Benghazi City. The study faced this limitation because medical records lacked complete information, which prevented screening all potential candidates and limited recruitment to a single medical facility. The study also faced a drawback because the examiner-maintained, and awareness of the study groups, which might have caused them to develop observer bias. Despite these limitations, the study had several strengths, including siblings and cousins of autism-diagnosed children who formed the control group because these family members probably experienced the same environmental and lifestyle and dental health factors, which created an excellent match between the groups. Parents at the Rehabilitation Center filled out the questionnaires while the investigator stayed with them to explain any confusing questions, which resulted in better response quality and complete answers.

Conclusion: Although parents had good educational level, they gave less attention to dental problems and treatment. Parents of Libyan autistic children reported that it is difficult for them to locate a dentist willing to treat their children. Among all behavior guidance techniques, sedation was the most parentally perceived and accepted behavior guidance technique to be used with their autistic children. General anesthesia as a behavior guidance technique came second to sedation. However, Tell-Show-Do was highly parentally perceived and accepted as a behavior guidance technique used with non-autistic children.

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